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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WEST, JEFFREY R

ART UNIT PAPER NUMBER

2857

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,904

Applicant(s)

ELWOOD ET AL.

Examiner

Jeffrey R. West

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because no second page of the oath/declaration has been received. Therefore the oath/declaration is missing the clause regarding "willful false statements ..." required by 37 CFR 1.68.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps presented in the claims must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because its length is less than the required 50 words. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities:

On page 9, lines 6-7, "lifetime hours used at 20° C" should be —lifetime hours used at 20° C—.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-9, 11, 15 and 18-26 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 18 are rejected under 35 U.S.C. 112, first paragraph, because they include the limitation of "calculating the percentage gas sensor lifetime hours for comparison with its respective maximum percentage hours for said gas sensor." This limitation is ambiguous because the claims previously recite, "adjusting a percentage gas sensor lifetime hours." It is unclear to one having ordinary skill in the art how the "percentage gas sensor lifetime hours" can be adjusted before it is calculated and therefore it is unclear how to use the invention as claimed.

Claims 5, 11, and 22 are rejected under 35 U.S.C. 112, first paragraph, because they include limitations regarding a "set point." However, in view of the specification and drawings a definition of a "set point" with respect to the sensor is not given. Therefore the specification is not enabling for this claimed limitation.

Claims 6, 15, and 18 are rejected under 35 U.S.C. 112, first paragraph, because they include limitations specifying a 90% maximum percentage. However, there is no mention or description regarding his specific percentage present in the instant drawings or specification. Therefore the specification is not enabling for this claimed limitation.

Claims 2-4, 7-9, 16, 17, 19-21, and 23-26 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate, and fail to correct, the lack of clarity present in their respective parent claims.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-9 and 18-26 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 18 are considered vague and indefinite because they contain the confusing language "adjusting a percentage gas sensor lifetime hours" and "means for adjusting a percentage gas sensor lifetime", respectively. It is suggested that

Applicant re-word these limitations to read ---adjusting a percentage lifetime hours measurement for a gas sensor--- and ---means for adjusting a percentage lifetime hours measurement for a gas sensor---.

Claims 1 and 18 are also rejected under 35 U.S.C. 112, second paragraph, as lacking antecedent basis because they recite, “[n]ormalizing said lifetime hours adjustments” while there is no previous mention of a “lifetime hours adjustments”. Further, it is unclear in this recitation whether it is the adjustment value itself that is being normalized or whether it is the previously adjusted lifetime hours that are being normalized. It is requested that Applicant clarify this limitation.

Claims 3 and 20 are rejected under 35 U.S.C. 112, second paragraph, because they recite, “wherein an hour count is stored in percentage gas sensor lifetime hours at a temperature of 20 degrees Celsius in said embedded controller.” This limitation is vague and indefinite because it is unclear what step this limitation further limits. As stated, the “hour count” seems to further limit the hour value of the adjusting step in claims 2 and 20. The specification, however, describes the hour count stored in %O₂ lifetime hours used at 20 degrees Celsius for the normalization step (page 9, lines 5-7), not the adjusting step. Therefore it is unclear whether these claims further limit the normalizing step or the adjusting step.

Claims 4 and 21 are rejected as being vague and indefinite because they recite, “wherein the step of normalization includes gas concentration and gas sensor temperature remaining constant over a previous hour.” This limitation provides no

further limiting information on how the gas concentration and gas sensor temperature have any effect on the step of normalization.

Claims 20, 22, and 23 are rejected under 35 U.S.C. 112, second paragraph, as lacking antecedent basis because claim 20 includes the limitation "said embedded controller" with no previous mention of any "embedded controller" and claims 22 and 23 include, "the embedded controller" with no previous mention of any "embedded controller."

Claims 2, 5-9, 19, and 24-26 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the faulty language present in their respective parent claims.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by International Publication No. WO 96/35944 to Radford et al.

Radford discloses a general incubator including at least one gas sensor disposed therein (page 6, lines 13-14), an embedded controller circuit (Figure 3) for analyzing the at least one gas sensor for imminent failure (page 6, line 20 to page 7, line 2),

and an interface display for indicating the occurrence of the gas sensor imminent failure (i.e. video alarm) (page 3, lines 22-27).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 2, 6, 10-19, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,701,415 to Dutton et al. in view of JP Publication No. 08-233770 to Hatai and further in view of U.S. Patent No. 6,279,377 to Cao.

Dutton discloses a controlled gas atmosphere incubator (column 4, lines 26-30) with a carbon dioxide sensor and an oxygen sensor disposed therein (column 7, lines 30-37 and 64-67) and an embedded controller that accesses a plurality of set points (column 10, lines 3-10) and monitors the set points for temperature and gas concentration changed to determine a failure condition (column 11, lines 19-45), wherein upon the occurrence of a failure condition, a re-settable alarm interface display is activated to indicate the failure condition to a user (column 11, line 45-49 and column 12, lines 11-16). Dutton also discloses a cumulative clock (i.e. timer) in the controller for use in the main testing operation (column 11, lines 10-18).

As noted above, Dutton teaches many of the features of the claimed invention. Dutton, however, discloses a general method for testing the operation of an incubator using oxygen and carbon dioxide sensor but doesn't provide a method for testing/predicting the life of the sensors themselves.

Hatai teaches an electrochemical gas sensor and a corresponding method for analyzing the gas sensor for lifetime adjustment values, at predetermined sensor operation time intervals determined by a clock, comprising obtaining lifetime data from the sensor, adjusting the lifetime data obtained based up a stored calculation rule, and comparing the adjusted lifetime data to predetermined thresholds (0013) in order to display warning results to a user in the form of deterioration indications of the sensor (abstract). Hatai also teaches performing the adjusting with the calculation rule according to data stored in a look-up table of temperatures ranging from -10 to 50 degrees Celsius (0015-0018) and further, since Hatai teaches determining the time when the adjusted sensor value has reaches a half deterioration (0020) it is considered inherent that the adjusted sensor value must be compared to its previous maximum value in order to determine when it reaches this point.

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton to include a method for testing/predicting the life of the sensors themselves, as taught by Hatai, because Hatai suggests that the combination would have provided the user a way to avoid complete failure of the sensors, thereby

giving the user time to replace the sensors, by notifying the user of the lifetime by detecting the deterioration of sensitivity easily and accurately (abstract).

While the invention of Dutton and Hatai doesn't specifically disclose performing the adjusting operation every hour, the combination does teach that the adjusting step should be set up at intervals corresponding to the actual environment of the sensor (Hatai, 0022). Therefore, it would have been obvious to one having ordinary skill in the art to specify that the adjusting step be executed hourly if this interval provided suitable accuracy for the current environment. Similarly, since Applicant fails to disclose any criticality to specifying that the warning message be displayed once the percentage hours lifetime exceeds 90%, and it would have been obvious to one having ordinary skill in the art to display the warning message at any threshold depending on the amount of pre-failure time the user desires, this feature is not considered patentable over the prior art.

Further, although the combination of Dutton and Hatai doesn't specifically disclose that the life values are in the form of percentage hours, this limitation is not considered critical to the patentability of the invention since it would have been obvious to one having ordinary skill in the art to express the data in any form desired. Further, as indicated by the cited documents below, it is well known in the art to determine the life of gas sensors in the form of percentage hours.

As noted above, the invention of Dutton and Hatai teaches many of the features of the claimed invention and while the invention of Dutton and Hatai does disclose

adjusting the sensor life values based upon data stored in a table, the combination doesn't specifically define this process as normalizing the adjustments.

Cao teaches a method and apparatus for monitoring oxygen concentration including an oxygen concentration sensor, processor, display (column 3, lines 43-58) and re-settable alarm (column 5, lines 50-67). Cao also teaches calibrating the monitoring device according to a table having oxygen concentration values, which are a function of pressure and temperature, wherein in order to perform calibration the actual output of the sensors are normalized to expected values defined in the table (column 7, lines 11-28).

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton and Hatai to include specifying that the adjusting step include normalization, as taught by Cao, because, as suggested by Cao, the combination would have accounted for differences in specific sensors used to monitor the gas concentrations in order to provide accurate results (column 7, lines 11-28).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Detector Electronics, "Specification Data R8471 Series Gas Controllers" teaches a method/system for monitoring the output of a gas sensor including determining the end of life of the sensor.

Apogee, "Oxygen Sensor (Model O2S)" teaches an oxygen sensor having a life expectancy expressed in percent-hours.

General Monitors, "G-Series Portables" teaches a multi-gas sensor that indicates the remaining life of the sensor in 0-100 percent-life.

U.S. Patent Application Publication No. 2002/0075500 to Kurz et al. teaches a method for proving information, such as percent life remaining, for a customer replaceable unit.

U.S. Patent No. 6,428,684 to Warburton teaches a method and apparatus for diagnosing the condition of a gas sensor.

J.P. Publication No. 07-198672 to Takahashi teaches a life diagnostic device for an oxygen sensor wherein the life of the sensor is determined when the normal operating temperature is within a specified range continuously for a specified time.

EP Patent No. 0 180 138 to Niedrach et al. teaches an oxygen sensor with residual life indicator.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are

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(703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jr
June 2, 2003

